Lecture #5

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February 02, 2016

Trickiness in R markdown files

- you are using 3 languages

```
x^(2*a)  # exponentiates variable x - R code
x^2a^ # renders formula  in a line of text - Rmarkdown code
x^{2a} # renders code inside of equation markers $$ - LaTeX code
```

LateX code in your R document

- can be used anywhere in the R markdown text (but not in R chunks)
- rendering to pdf: LateX instructions followed
- rendering to html: LaTeX instructions ignored!
- most common LaTeX command `\newpage`
- LaTeX really only needed for documents that have to be printed

Functions

Reasons to Use Functions

- structured programming
- recycling of variable names
- independent testing of functions
- reuses code in different places in program and in different programs
- cut and paste to use the code of others in your own program(!)

```
MyfunctionName <- function(Arg1,Arg2,...) {

add all R code between brackets

return(VariableName)

}
```

Using the function

- Source function with `source(MyfunctionName)`
- Run function with `MyfunctionName(val1,val2)`
- Run function with default values `MyfunctionName()`
- Print the function code to the console `MyfunctionName`

All R codes are functions

Rules for scope

- all arguments and function variables are local (hierarchical)
- names do not replace same names of global variables
- functions can call other functions
- functions can use global variables (not recommended)

Function	Group
runif()	1
rnorm()	2
rep()	3
seq()	4
sort()	5
order()	6
which()	1
sample()	2
ceiling()	3
floor()	4
round()	5
trunc()	6
signif()	1
sort()	2
table()	3
unique()	4
any()	5
cat()	6
range()	1
diff()	2
cumsum()	3
cumprod()	4
cummax()	5
cummin()	6